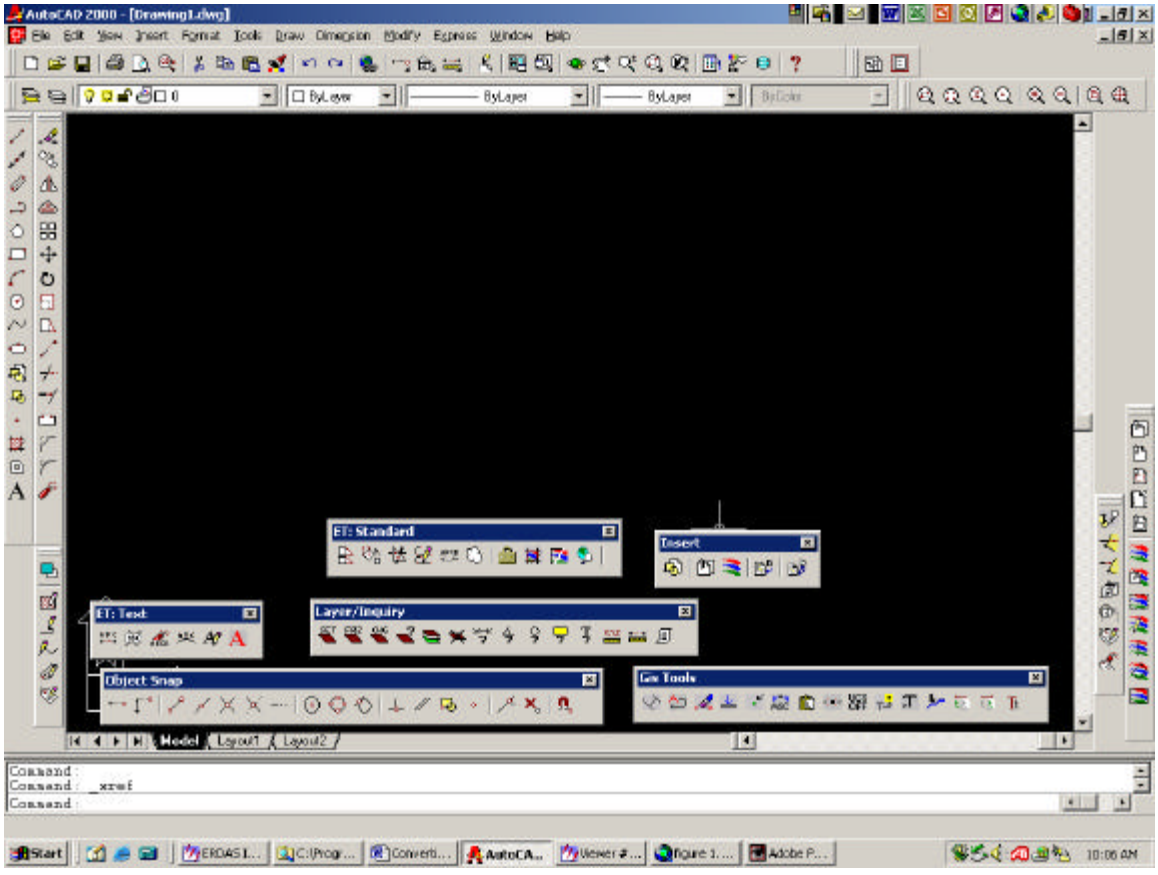
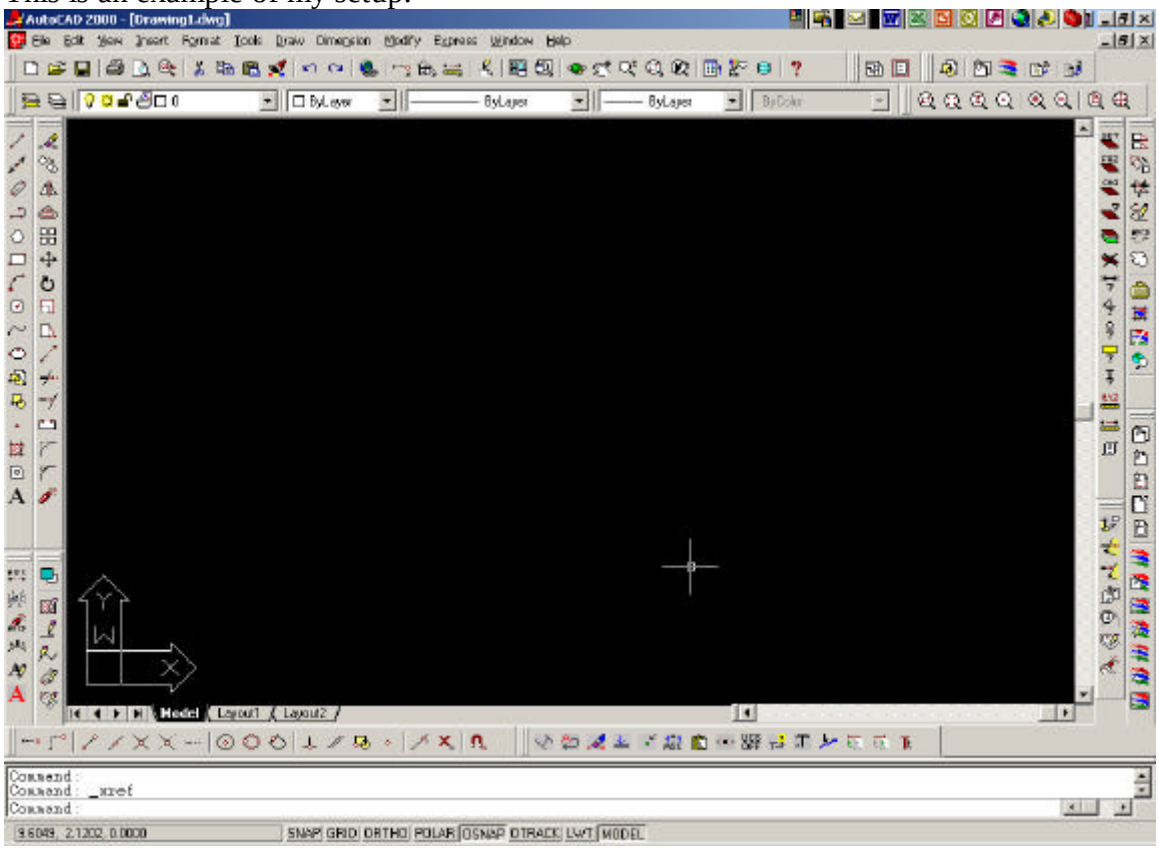
Converting CADD Federal Channel Surveys into a GIS Federal Channel Alignment
By: Greg Dreaper

The programs this process requires are AutoCAD 2000, Excel, and ArcGIS. This method, also, inquires that the user installs a numbers of LSPs, BMP, and Menus for AutoCAD.

1. When loading AutoCAD, be sure to load it on the C drive or none of the LSP programs will work.
2. Along with this guide, there will be an AutoCAD 2000 Menu folder, copy the Bmp, Drafquic, Express, Jobs, Lsp, and Script folders into the C:\Program Files\ACAD2000 folder. Then copy the file inside of the Support_Menu folder into the C:\Program Files\ACAD2000\SUPPORT folder.
3. Start AutoCAD in a blank drawing. Under the main menu select TOOLS and OPTIONS.
4. Under the File tab, expand the SUPPORT FILE SEARCH PATH. Click Add and type C:\Program Files\ACAD2000\bmps. Click OK to exit the menu.
5. In the command prompt, type MENU, under the file type select MENU TEMPLATE (*.mnu), and select ACAD.MNU and Select OK. This will bring up all the custom menus need to complete the conversion process. Arrange the menu to your taste. Below is and example of what needs to be displayed.

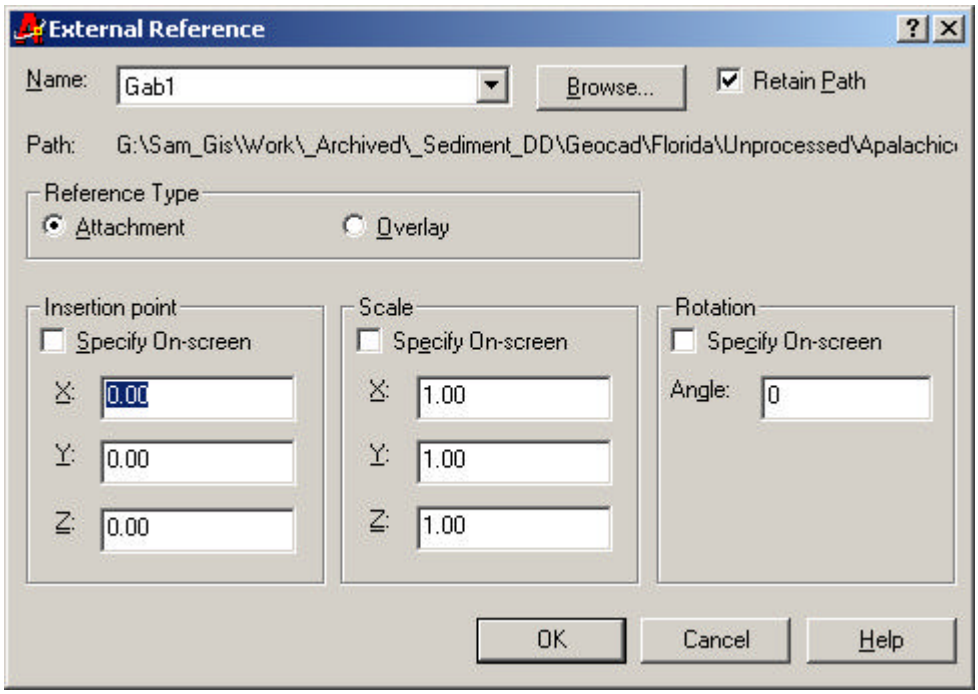


This is an example of my setup.

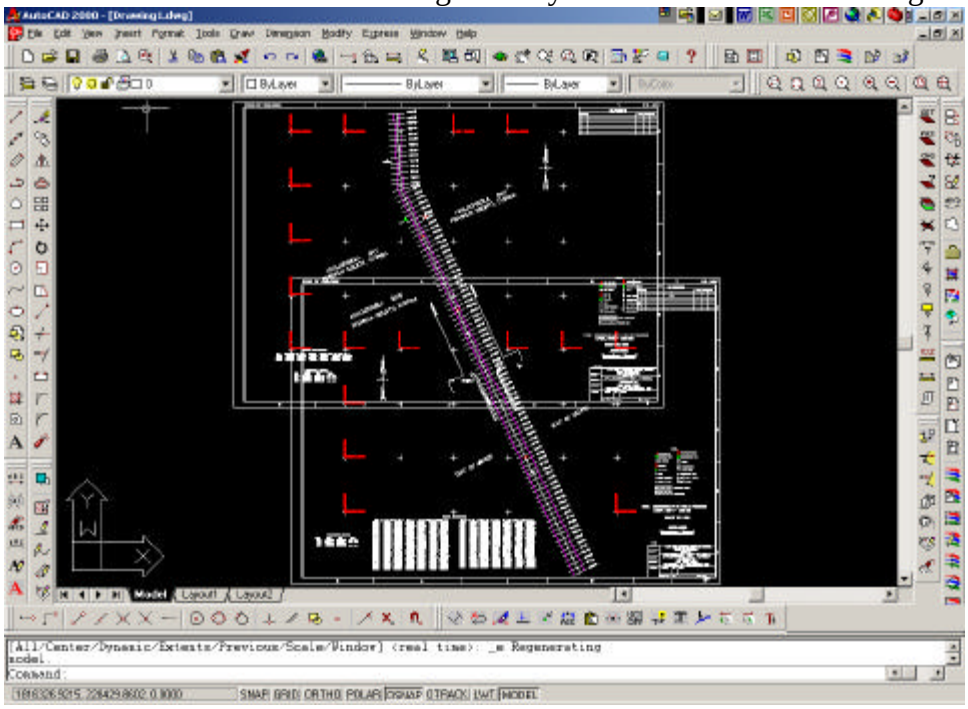


Ideally, before any of the drawings are worked on, each District must consider the naming schema that the channels will take. The Mobile District inquires a unique two-character abbreviation for each channel. This is very important to establish these codes early, not only to avoid later confusion in post processing, but when all of these projects are brought together, there will not be any duplication of channel codes. Also, Attached to these instructions is the codes already in use by the Mobile District.

6. In the new drawing, select the reference button. Form the Insert toolbar, click the EXTERNAL REFERANCE button  , select ATTACH and find and select the desired drawings. Hit OK. From the External Reference Dialog Box, under Insertion point, uncheck Specify on Screen and hit OK.



7. Load in the Drawings one at the time until a complete set of drawings is load for a particular channel.
8. Once the Drawings are loaded, once again, select the reference button.  From here, highlight all of the drawings and hit BIND. From the Bind Xrefs Dialog box select INSERT. Hit OK and OK again.
9. Now that the drawings are attached, save the drawing by its code. Once saved, it is time to start editing the drawing. Below is an Example the A channel in the Florida Panhandle. These drawing are only referenced into the drawing.



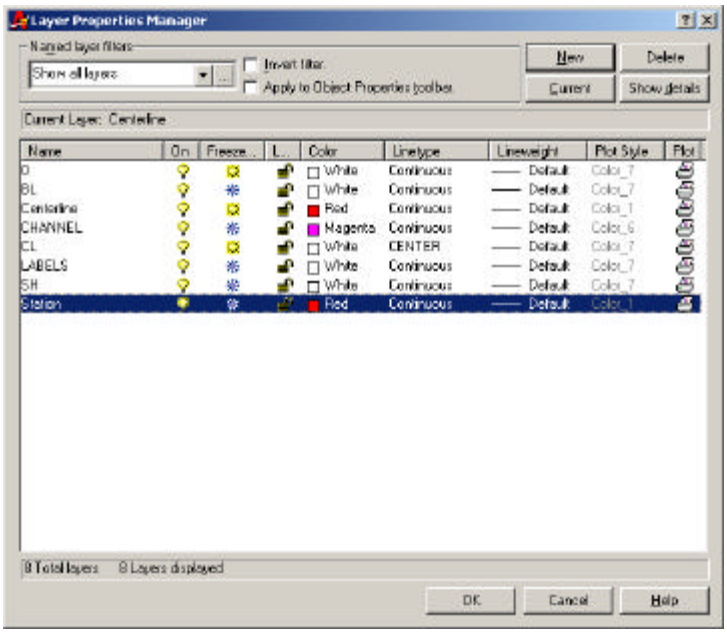
The finished CADD file should only have 3 three layers in it, the two-character channel code layer containing the channel boundary and the station numbers, a Centerline layer containing only the centerline of the channel, and a Station layer containing all the stations.

10. We need to first explode the inserted drawings. This may require more than one explosion, but be sure not to do too many or the drawing will end up with too many elements.
11. Using the Layer/Inquiry tool bar, select the global layer delete button.  Begin to delete everything except the channel boundary, centerline, and stationing.
12. Once this is complete, in the command prompt, type PURGE, then type A for all, then hit ENTER, and finally chose Verify each name to be purged? [Yes/No] <Y>. That is up to you.
13. Hit the Layer button  and under the Layer properties dialog box, add three layers. Hit NEW, name one layer the two-character channel abbreviation, one Centerline, and the last Station. The Station and Centerline layers should always be red and all of the layers should be a Continuous line type.
14. Now the moving process begins. Select 

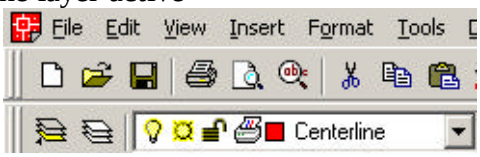
button and select the element to figure out what layer they are on.
15. Click the Global Layer Change button  , type in the station layer name, hit ENTER, then type in STATION, hit enter. Now all the stations elements should reside on the layer named STATION.

The centerline and boundary are going to be done a little different. These polylines are going to be manually traced into their appropriate layer.

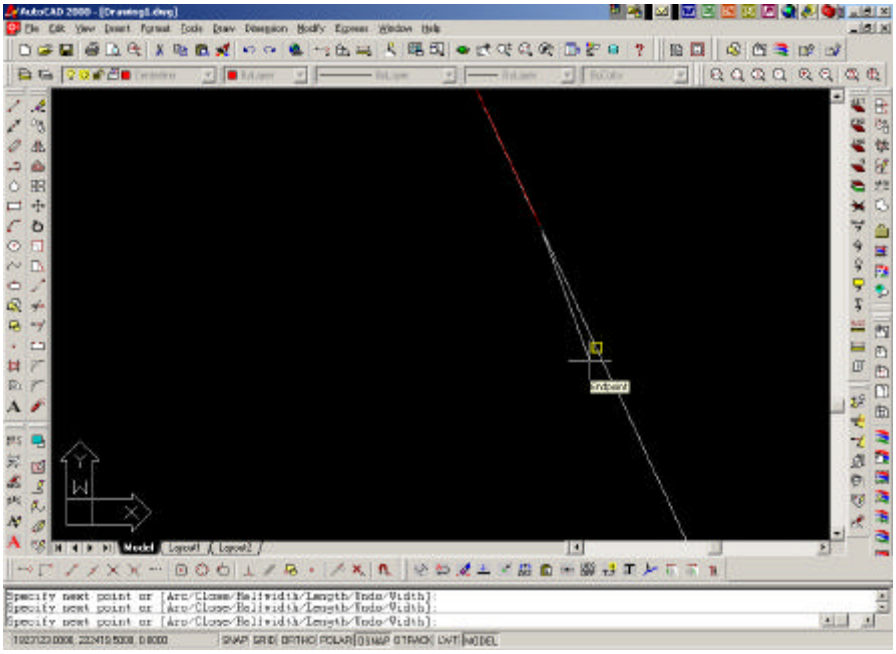
16. Begin by setting your snapping setting. From the main menu, hit TOOLS and select DRAFTING SETTINGS. Under the OBJECT SNAP tab, check midpoint, endpoint, and hit OK.
17. Click the Layer button; Freeze all the layers except the empty Centerline layer and the layer that contains the centerline (I my case I had to leave CL and Centerline unfrozen) and then the hit OK.



18. Make the Centerline layer active



19. Select the polylines tool  . Being to trace over the old centerline, be sure to use your endpoint and midpoint snapping. (TIP: F3 turns on and off the snapping function.)



20. Once the Centerline is complete, Click back into the Layer Properties and UNFREEZE all the layers. However, FREEZE the Centerline layer that has just finished, and click OK.
21. Select the Global Delete button  and select the old centerline. This will ensure that the centerline in the Centerline layer is a continuous polyline. This will be important in developing a mile maker theme later on.

There are two ways of completing the boundary. One you can trace the boundary with the polyline tool similar the tracing of the centerline, or if you know the actual with width of the channel you can offset the centerline to that distance. This is, also, a very good quality control method. This will allow you to find discrepancies in the boundary.

22. Redo steps 17-21 for the channel layer. Be careful when tracing the boundary. When one is at the end of tracing the boundary, be sure to close the polylines. To do this, right before one gets to the beginning point, type C and press enter. This will automatically draw a line from the last vertex to the beginning vertex.

    To offset the center line for a channel that 125 feet wide, click  and type 62.5 Then the offset command creates an object at that specified distance from an existing object. Select one object or press ENTER to end the command. Specify a point (1) on the side of the object you want to offset.

23. Move the station numbers, into the new the new two-character channel code layer that contains the channel boundary.
24. Once your channel is complete, purge you drawing again. In the command prompt, type PURGE, then type A for all, then hit ENTER, and final you can chose Verify each name to be purged? [Yes/No] <Y>. That is up to you.

Dealing with text is not the difficult but very timely. The goal of text manipulation is to ensure that a center node on all pieces of text snaps to the exact location of the intersection between the Centerline and each station. This intersection will build a point theme later on in the channel process.

25. Click the text justification tool  , type C for center alignment, hit ENTER, type Y to trim any spaces before the text, and hit ENTER. Now select the desired, and hit ENTER. Once edited the text will change to a green color, indicating the text was changed, it does not change the layer of the text.
26. Click the move by snap tool  , select the station text needed to move and hit ENTER.
27.